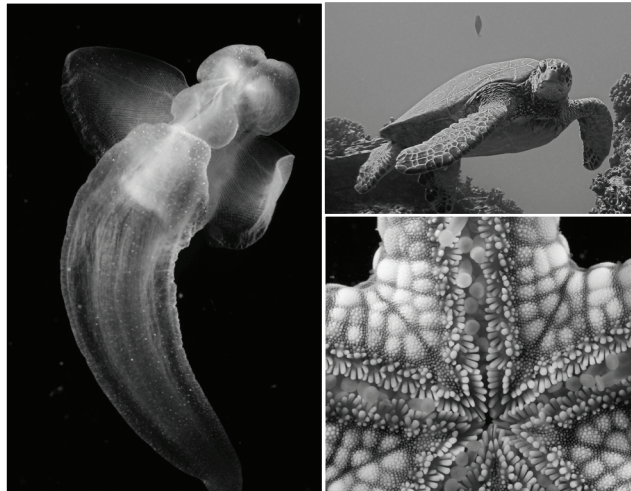


NBII Marine Data and Functionality Increase Dramatically in OBIS-USA

The world's oceans are critically important to all of us, providing food and recreation opportunities, contributing to economic growth and national security, and influencing our climate. At the same time, oceans are threatened by a variety of changes, including warming temperatures, increasing ocean acidity, invasion by non-native species, overharvesting, and loss of habitat for species of concern.

Recognizing the critical importance of our oceans, the Administration has issued an interim framework for ocean



Clockwise, starting left: Clione limacina (sea angel). The most common naked pteropod of arctic waters. Census of Marine Life Arctic Ocean Diversity project, © Kevin Raskoff. Green sea turtle, Hawaii. Photo by Paul Wang. Nardoa rosea sea star as seen from the underside. Photographed during Census of Coral Reef Ecosystems (CReefs) research, Heron Island, Australia. Gary Cranitch © 2008.

policy. The policy includes elements such as sustainable and resilient ecosystems, spatial planning, and informed decision-making. All require access to critical information on marine biodiversity.

The National Biological Information Infrastructure (NBII) is helping to meet this challenge by hosting OBIS-USA <<http://obisusa.nbii.gov/>>, a one-stop source for biogeographic data collected from U.S. waters and oceanic regions (the Arctic, the Atlantic and Pacific oceans, the Caribbean Sea, the Gulf of Mexico, and the Great Lakes). In recent months

(Continued on page 3)

Comprehensive National Park Lichen Database Released Through the NBII

Lichens play important ecological roles, including influencing water availability, breaking down rocks and forming soil, preventing soil erosion, enhancing mineral cycling, providing shelter and nesting materials for animals and birds, supplying winter forage for deer and small mammals, and as indicator species that help scientists monitor the occurrence and effects of climate change and air pollution.

Much of the data about these species are currently stored across distributed information systems, making it difficult to obtain the information needed to help conserve these important components

of biodiversity. Protected areas such as the National Parks offer a way to preserve important organisms such as lichens and the habitats they occupy and also to provide key data about species' health and distribution that can be used by scientists to identify and monitor changes over time.

The National Park Lichen (NPLichen) database <<http://www.nbii.gov/nplichen>> contains the most comprehensive online distribution record of lichen species in the United States. More than 29,900 documented occurrence records and 2,650 species in 153 National Park units with over 530 references are accessible via the

Web site. These records were obtained from the scientific literature, National

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NBII Home Page Update: Changes and Additions

Since its inception earlier this year, the new NBII home page has continued to change and evolve. Its most obvious graphic change has been the monthly transition of digital images in the home page slideshow, highlighting and linking to different NBII features. The slideshow is used to spotlight NBII content that is new, recently updated, or especially topical, like the H1N1 virus information page on the Southern Appalachian Information Node site.

The most dramatic recent change is the accessibility of the new NBII search engine, based in Vivisimo, through a search box at the top-right corner of the home page. Visitors to the home page can perform a one-word or multiword search across an index that covers the entire NBII, as well as selected additional biological sources. They can also choose the “Advanced” search page to perform a more customized search that may use a variety of special options.

Another major recent change has been the creation of the NBII Blog and its use as our news reporting feature. News from the NBII now includes

articles on full-featured blog pages with a calendar of upcoming conferences on biological themes; access to the blog archive; and other links.

There are now links to six RSS feed sources throughout the NBII that are offered through the home page, in the display area to the right of the slideshow frame. Each source may offer one or more individual feeds.

The A-to-Z Index of the NBII has been augmented with many new entries, and the list is expected to continue growing in the months ahead. It can be reached either through a link above the RSS feed titles or through the “About NBII” drop-down list on the menu bar below the page header. Although the A-to-Z Index is selective and partial in its coverage of the NBII, it offers a single point at which dozens of NBII features are briefly described and can be browsed, with live links to each item.

Several new entries have been added to the home page’s clickable map, giving users a very selective view of major NBII features and projects, by region, across the United States.

Finally, the bottom of the home page, with the “People Are Asking...” and “NBII Publications Library” sections, has been slightly redesigned to improve its organization and appearance.

NBII in the News

- An article from *The Wall Street Journal* on August 28, 2009 (“A Data Deluge Swamps Science Historians”) talked about today’s data problems <<http://online.wsj.com/article/SB125139942345664387.html>>. The article featured excerpts from DataONE partners and collaborators. The NBII is one of the primary Principal Investigators and a major collaborator in the DataONE project.
- The NBII was listed among freely available and useful science resources on the Internet in “All (Almost) on the Internet: Freely Available Science Information Resources on the Web.” See the June 2009 issue of *Searcher* magazine. An abstract is available at <<http://www.infotoday.com/searcher/jun09/index.shtml>>.
- OBIS-USA (see our cover story) was also featured in the September 2009 issue of the U.S. Census of Marine Life program newsletter (Volume 4, Issue 1). See <http://www.oceanleadership.org/wp-content/uploads/2009/02/2009_USNC_Summer_Newsletter.pdf>.
- Photographers from NBII *LIFE* (Library of Images from the Environment) <<http://life.nbii.gov/>> find their work in demand. John J. Mosesso’s photograph of a pika was used in “Mountain Critter: Candidate for Endangered List” (see *(Continued on page 8)*)

Access

Access, the quarterly newsletter of the National Biological Information Infrastructure, is published by the NBII National Program Office.

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Be sure to check out Access online at <www.nbii.gov> → Publications Library.

Please direct your general questions about the NBII, including partnership opportunities, to:

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Visit the NBII Home Page at <www.nbii.gov>.

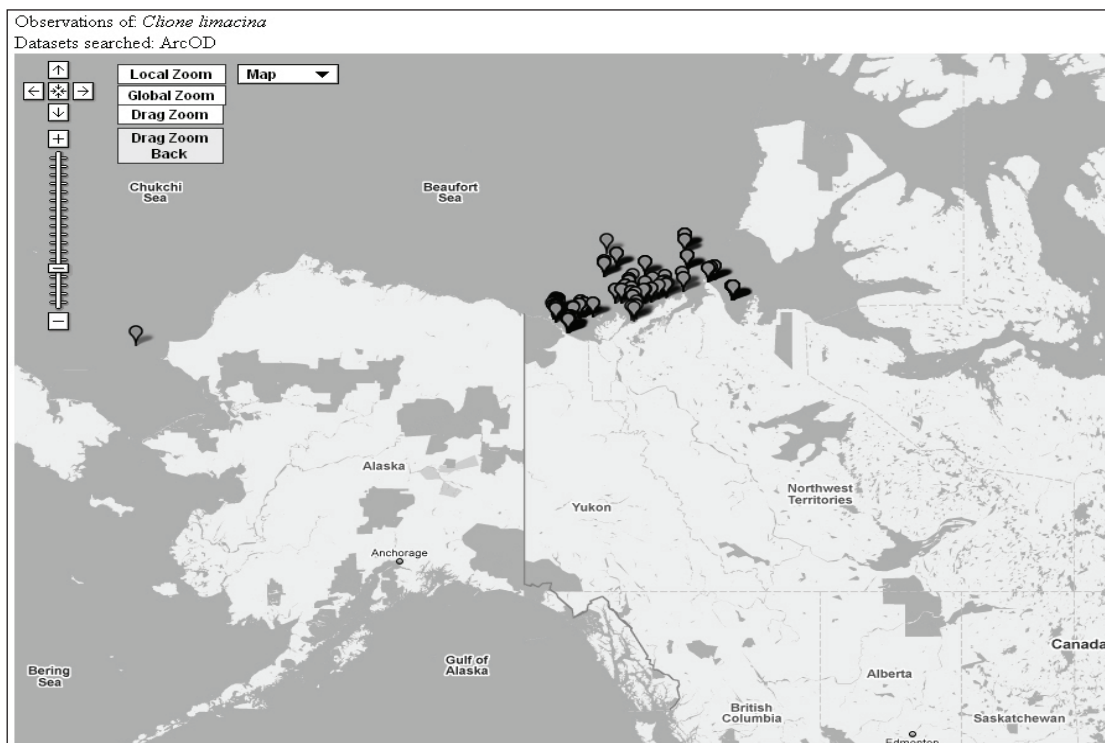
OBIS-USA, the U.S. node of the international Ocean Biogeographic Information System (iOBIS), has revamped its site to provide more data and increased functionality.

Established in 2006 in cooperation with the U.S. National Committee (USNC) for the Census of Marine Life (CoML), a committee composed of nationally renowned marine scientists, OBIS-USA is a partnership of state, federal, and scientific organizations. The USNC views OBIS-USA as one of its most important legacies from the ten-year Census of Marine Life Program.

Today, OBIS-USA data include approximately 2.5 million records from 31 data providers. The site provides a work space for visitors to search and manipulate that data. This is accomplished in collaboration with data providers to produce a compilation of data in a common format. Data are interoperable and can be consistently viewed and applied by researchers, decision-makers, and resource managers.

Users can search and download data and metadata describing when and where species were observed or collected. The site's offerings are available through an *atlas* (where users can review and select the site's data sets). Individual or composite data sets (user-created selections from the entire holdings) may be viewed through several functions, including:

- *data dashboard* - provides a pictorial view of data attributes that lets users assess their utility;
- *data richness* - assesses how well the data are populated for selected elements;



OBIS-USA screen shot showing 396 observations of *Clione limacina* (photo on cover), (data set searched: ArcOD – the Census of Marine Life Arctic Ocean Diversity project).

- *data quality* - provides key data collection data;
- *duplication status* - indicates if a data set may contain duplicate records;
- *general metadata* - displays the Federal Geographic Data Committee data record;
- *geographic coverage* - displays data collection sites spatially;
- *participants* - names OBIS-USA participants, with the option to connect back to the atlas, dashboard, and metadata subcommunities; and
- *taxonomic depth* - table shows the levels of taxonomic hierarchy for each organism.

No other site offers such a diverse collection of marine data sets along with these data analysis tools.

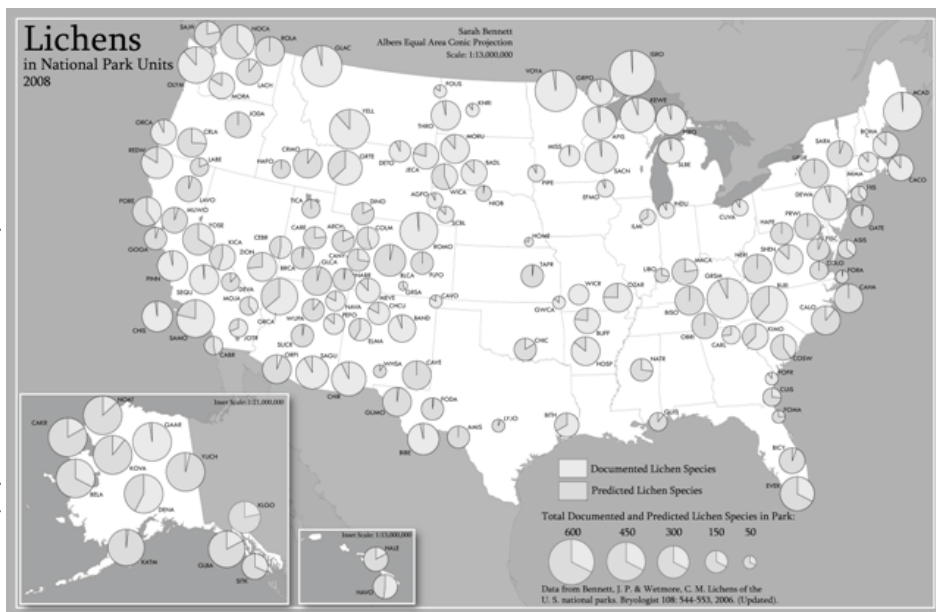
Already a partner in the national Integrated Ocean Observing System (IOOS®), OBIS-USA will be investigating ways to assist with the implementation of new ocean policy as it develops. It is already clear

that OBIS-USA could contribute substantially to the emerging interagency group addressing marine spatial planning. Stay tuned to further developments, as goals this year include an increase in data up to 10 million records and expanded functionality to address other needs, such as integration with non-biological data and further capability regarding species distributions.

Melissa Brodeur of the U.S. CoML Program Office says, "It is our vision for OBIS-USA to continually grow as a system that supports sound management of marine life and ocean resources in the United States by providing valuable marine biodiversity information and easy search and analysis tools."

To learn more about OBIS-USA, including growing its list of data and exploring partnerships, contact Mark Fornwall <mark_fornwall@usgs.gov> or John Mosesso <john_mosesso@usgs.gov>.

Credit: map by Sarah C. Bennett, University of Wisconsin-Madison

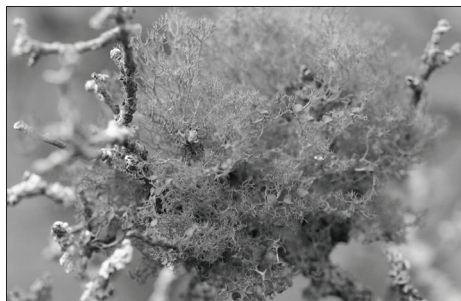


Total documented and predicted lichen species in 153 National Park Units (2008).

Park Service reports, and the University of Minnesota Herbarium.

The data-rich Web site was launched by the National Biological

Photo credit: Elizabeth A. Sellers



Orange foliose bark lichen (*Teloschistes exilis*) photographed in Austin, TX.

Information Infrastructure (NBII) Program, Dr. James Bennett from the U.S. Geological Survey's National Wildlife Health Center, and NBII Wildlife Disease Information Node partners at the University of Wisconsin Nelson Institute for Environmental Studies in January 2009.

The site features the following options:

- **Parks summary and map** shows documented lichen species;
- **Search by parks** to obtain a list of species present in the park or a complete list of references for that park showing verified species occurrences;
- **Search by reference** to obtain the

- complete citation or a complete species list; and
- **Search by species** to retrieve a list of parks or a map of parks where a species can be found and to obtain a list of references for that species.

The associated NPLichen mapping module allows users to see the geographic distribution of species they select from the Lichens database on a Google Maps API mapping application. The application displays all the national parks that have been surveyed and indicates whether the lichen species the user selected is present at the park, as well as how much of the park has been inventoried. The technology behind the mapping application is a Java/JSP front end with a Microsoft SQL Server database on the back end. When a user submits a request to the map for a

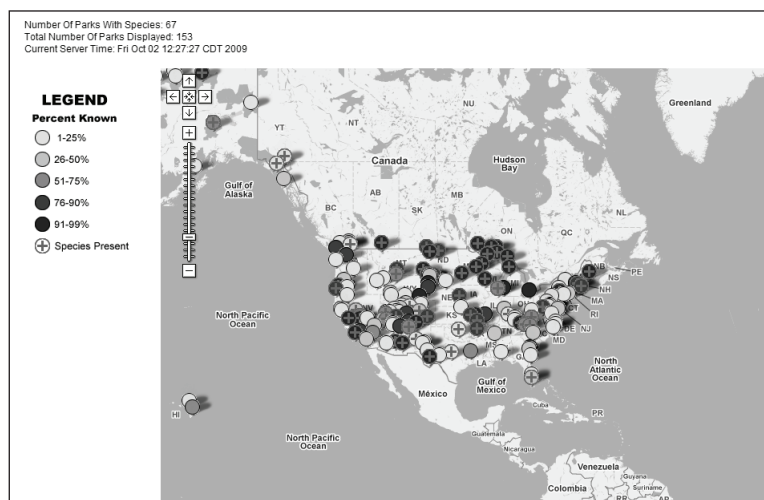
What Are Lichens?

Lichens are symbiotic organisms made up from as many as three kingdoms with the dominant partner represented by a fungus. The lichen fungi (kingdom Fungi) cultivate partners that manufacture food by photosynthesis. Sometimes the partners are algae (kingdom Protista); other times cyanobacteria (kingdom Monera) and some enterprising fungi exploit both at once!

Reference: Irwin M. Brodo, Sylvia Duran Sharnoff, and Stephen Sharnoff. *Lichens of North America*. <http://www.lichen.com/biology.html>.

particular species, a query is run against the database and a list of parks and visualization rules are passed to the mapping application and displayed for the user. The user can then interact with the map using the built-in tools, like zooming, changing background layers, panning, and clicking on specific park markers. When a user clicks on a park marker, the name of the park is displayed, along with the lichen species name and the percentage of the park that has been inventoried.

For more information about the NPLichen database, please contact Dr. Jim Bennett <jpbennett@usgs.gov> or Jennifer Carlino <jcarlino@usgs.gov>.



NPLichen Map for *Physcia aiopolia*.

Credit: NBII Wildlife Disease Information Node, University of Wisconsin-Madison

NBII's Recent Metadata Outreach Activities

GBIF Metadata Task Group:

Throughout the summer, Viv Hutchison has represented the NBII as an appointed member of the Global Biodiversity Information Facility (GBIF) Metadata Task Group. The group, consisting of a range of global participants from such locations as Australia, Taiwan, Denmark, and the United States, has met several times virtually in addition to one face-to-face meeting at the U.S. Geological Survey's Western Fisheries Research Center in Seattle, WA. The result of the Task Group's work is a document of recommendations to the GBIF organization on ways to proceed in incorporating metadata for data sets into the vast collection of museum specimen metadata that GBIF currently collects. The recommendations will allow GBIF to expand its ability to share comprehensive information about pertinent data that impacts a global community.

Metadata in South Africa: The NBII was sponsored by the National Center for Ecological Analysis and Synthesis (NCEAS) to present a metadata workshop in South Africa this summer (see photo above). At a workshop for biologists at Kruger National Park, the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and Biological Data Profile was promoted in conjunction with the Ecological Metadata Language (EML), illustrating each standard's strengths in documenting a wide variety of data. The NBII Clearinghouse, through a partnership with NCEAS (which maintains the Knowledge Network for Biodiversity), shares metadata from Kruger National Park in support of the World Data Center, hosted by the NBII.

Ecological Society of America (ESA) Conference: The NBII



NBII and NCEAS meeting with the group in Pretoria, South Africa.


Metadata Program was promoted in a presentation by Viv Hutchison in a session titled, "Standards, Protocols, and Tools for Sharing Ecological Information: Data Interoperability on a Global Scale" on August 7, 2009, in Albuquerque, NM. The conference session was organized by the NBII's Annie Simpson, Elizabeth Sellers, and Viv Hutchison.

American Ornithological Union (AOU) Conference: At a panel presentation in a pre-conference workshop for the AOU titled "Get the Most Out of Your Data Through Proper Archiving and Sharing," Viv Hutchison gave a presentation on the value of metadata and how best to employ resources available from the NBII Metadata Program. The workshop was attended by prominent researchers and data managers in the bird community.

NBII and University of Idaho: The University of Idaho sponsored the NBII to present an all-day workshop on data and metadata management practices, and to report on initiatives such as the National Science Foundation's DataONE. DataONE is currently developing applications for the use of metadata beyond

"discovery." Viv's presentation was titled "Making Metadata Work."

Ontario Showcase 2009: Viv Hutchison highlighted the NBII Metadata Program in a 90-minute presentation to the Ontario Showcase in Toronto, Canada, in September 2009. The Showcase session drew approximately 85 people to a session titled, "Who Said Metadata Isn't Fun?" The participants left the session with an introduction to metadata, an understanding of its importance, and an update on the state of the ISO North American Profile that will replace the current FGDC Content Standard in the near future.

The summer was busy for the NBII Metadata Program, and the benefits of such exposure to the biological informatics community will only serve to strengthen the program's ability to share important information about data sets that have been developed. Please visit the Clearinghouse at <<http://metadata.nbii.gov>> and send any questions and comments about metadata or the NBII Metadata Program to Viv Hutchison at <vhutchison@usgs.gov>. 

Invasive Species Toolbox

Do you have news about an invasive species project you would like to share through this column? Please send any ideas or suggestions for Toolbox columns to <asimpson@usgs.gov> or <esellers@usgs.gov>.

New Invasive Species Outreach Toolkit for Department of Defense Natural Resource Managers

To help Department of Defense (DoD) natural resource managers inform stakeholders about invasive species, the DoD Legacy Resource Management Program funded the creation of an *Invasive Species Outreach Toolkit*. The Toolkit includes the following items:

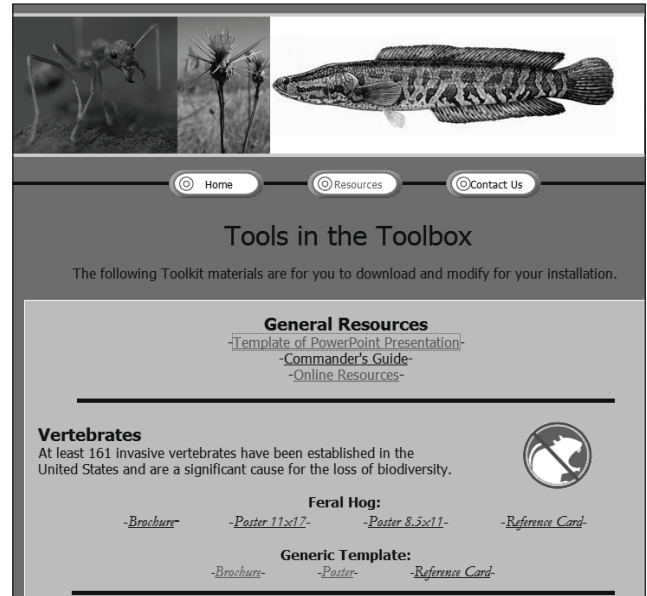
- Templates for posters and brochures, wallet-sized reference cards, and a PowerPoint presentation. Modifiable templates were created in each of four categories: vertebrates, insects, aquatics, and weeds.
- A downloadable *Commander's Guide* (in development).
- A list of online resources for natural resource managers. The list provides brief descriptions

and hyperlinks to primary information sources on invasive species.

Although it was developed to help DoD land managers communicate with three target audiences (installation personnel, commanders, and the public), the Toolkit is available to anyone and can be accessed online at <<http://www.nistoolkit.com>>.

Web Site Redesigned by the National Invasive Species Council (NISC)

Created by Executive Order in 1999, the NISC “provides high-level interdepartmental coordination of federal invasive species actions and works with other federal and non-federal groups to address invasive species issues at the national level.” The NISC has released the redesign of its Web site at <<http://www.invasivespecies.gov>> and it

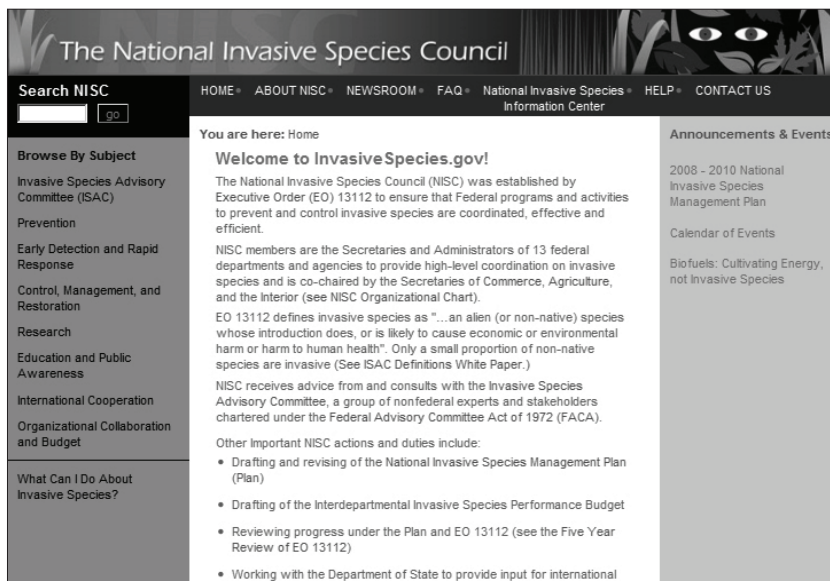


The DoD Invasive Species Outreach Toolkit provides templates and links to online resources about invasive vertebrates, plants, and insects. Although designed for use by military installations, these resources are also available to the public.

encourages the submission of articles and other items to the newsletter. For the latest newsletter version and contact information, see <http://www.invasivespecies.gov/home_documents/06-2009%20Newsletter.pdf>.

Early Detection of Invasive Species Monitoring Protocol Developed for Eastern National Parks

According to the National Park Service Inventory and Monitoring Program, “early detection monitoring of incipient invasive plants, animals, and diseases was ranked among the top priorities in the Eastern Rivers and Mountains Network (ERMN)”; therefore, a draft early detection protocol has been created and can be accessed at <<http://science.nature.nps.gov/im/units/ermn/monitoring/EarlyDetection.cfm>>. Field guides and lists of target invasive species for nine eastern parks are accessible at <<http://science.nature.nps.gov/im/units/ermn/monitoring/earlydetection/targetinvasives.cfm>>.



The U.S. National Invasive Species Council has recently redesigned its Web site, available at <<http://www.invasivespecies.gov>>.

Inter-American Biodiversity Information Network Holds Sixth Council Meeting

Responding to the continuing need for improved access to data and information on critical biodiversity issues in the Western Hemisphere, the governing Council of the Inter-American Biodiversity Information Network (IABIN) met in Bayahibe, Dominican Republic, in July 2009 to review the network's progress and plan future activities.

Mandated by the Heads of State of the Americas at the Inter-American Summit on Sustainable Development in 1996 in Santa Cruz, Bolivia, IABIN is a forum to foster technical collaboration and coordination among countries of the Americas in collecting, sharing, and using biodiversity information. IABIN's highest governing body is the IABIN Council, made up of one Focal Point from each country in the Americas. As official representatives of their countries' governments, the 34 Focal Points ensure that IABIN's strategic directions and activities complement national and regional biodiversity conservation efforts undertaken in the Americas.

This Council Meeting, the sixth since IABIN's creation at the 1996 Summit, comes at a time when IABIN is finalizing implementation

of the Global Environment Facility (GEF) Project that has provided its base funding over the past five years. Since beginning the project in 2004, IABIN has distributed over 120 grants to countries throughout Central and South America and the Caribbean to digitize and Web enable prioritized biodiversity data and information on a range of subjects. Council members shared the on-the-ground impacts these grants have made in their countries and discussed strategies for expanding IABIN's granting programs and extending them into new fields.

Country representatives also stressed that IABIN should contribute to countries' efforts to report on their upcoming 2010 Biodiversity Indicators outlined by the Convention on Biological Diversity (CBD). Most nations in the hemisphere have completed the National Biodiversity Strategies and Action Plans (NBSAPs) requested by the CBD, describing their efforts to integrate biodiversity conservation with wider planning and development activities. These NBSAPs will help prioritize remaining activities in the IABIN/GEF Project, including the development of visualization and analysis tools designed to make the data digitized

and mobilized in the project more accessible.

The NBSAPs now being implemented in the region will also help determine IABIN's future priorities. Council members discussed additional efforts IABIN can undertake in future projects and programs, including climate change and trade and economic issues, and took a series of actions to ensure the sustainability of the network. The Council formally requested a one-year extension to the current GEF project to complete implementation of all planned project activities, and has begun discussion of a second GEF proposal to extend IABIN's capacities to support sound decision-making in the region.

For more information, please contact Ben Wheeler at <bwheeler@usgs.gov>.

Coordinated by the USGS, the NBII is a broad, collaborative program to provide increased access to data and information on the nation's biological resources. The NBII International Program participates in worldwide biological informatics activities that promote information sharing and infrastructure development across borders.



Attendees of the sixth IABIN Council Meeting.

Photo credit: Organization of American States

NBII in the News *(continued from page 2)*

<<http://www.npr.org/templates/story/story.php?storyId=111583873&ps=cprs>>. The Executive Office, Environment & Natural Resources Division of the U.S. Department of Justice requested permission to use photographs by Elizabeth Sellers to illustrate their 100th anniversary Web site (see <<http://www.usdoj.gov/enrd/Anniversary/>>).

Volume 6, Issue 1, Fall 2009 of J. Murray Atkins Library *Biology Newsletter* talks about *LIFE* (in a section on “Web Sites of Interest to Biologists”).

- *Biodiversity: Journal of Life on Earth* has a special issue on Invasive Alien Species (Volume 10, Numbers 2 and 3, 2009). One of its articles (“Invasive species information networks ...”) is penned, in part, by three NBII invasive species information specialists – Annie Simpson, Christine Fournier, and Elizabeth Sellers.
- Articles on the new NBII search engine abound. They include: September 3, 2009, issue of *ResearchBuzz!* <<http://www.researchbuzz.org/wp/usgs-national-biological-information-infrastructure-updates-its-search-engine/>>; *Sindh Today – Online*

News <<http://www.sindhoday.net/news/1/47559.htm>>; *Saipan Tribune* <<http://www.saipantribune.com/newsstory.aspx?cat=13&newsID=93573>>; and the fall 2009 issue of *The Wildlife Professional* (“A Search Engine Revs Up”).

Upcoming Events of NBII Interest

18th Annual Urban Forestry Conference, Nashville, TN.	October 22–23
Restoring the West Conference 2009, Logan, UT.	October 27–28
Ecological Restoration of Coastal Habitats, Moss Point, MS.	October 27–29
Southeast Association of Fish and Wildlife Agencies, Atlanta, GA.	November 1–4
2009 Annual Meeting of the Waterbird Society, Cape May, NJ.	November 4–7



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